AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-33. (canceled)

34. (currently amended) A system for calculating distances to objects within three-dimensional space in an environment comprising horizontal and vertical lines using an angled axis machine vision system comprising:

a first camera;

a second camera mounted coplanar to said first camera wherein said first camera and said second camera comprise collinear horizontal center lines;

a camera mount coupled with said first camera and said second camera wherein said camera mount is at a fixed rotation of a first axial angle with between 0 and 90 degrees about a roll axis defined as parallel to ground; and,

a computer configured to perform a distance calculation wherein said computer is coupled with said first camera and said second camera and configured to calculate a distance using a first picture obtained from said first camera and a second picture obtained from said second camera to a feature found along an epipolar line parallel to said collinear horizontal center lines wherein said feature exists on a horizontal or vertical line in an environment with respect to said ground, yet wherein said line appears at said first axial angle with respect to said epipolar line when said camera mount is at said rotation of said first axial angle and wherein said distance calculation calculates distance to said feature using said epipolar line intersection with said horizontal or vertical line at said first axial angle to increase accuracy and useable detail and minimize errors in said distance calculation.

35. (previously presented) The system of claim 34 wherein said first axial angle is substantially 45 degrees.

36. (previously presented) The system of claim 34 wherein said first axial angle is substantially 37 degrees.

37. (previously presented) The system of claim 34 wherein said first axial angle is substantially 29 degrees.

38. (previously presented) The system of claim 34 wherein said camera mount is rotated in a second axial angle between 0 and 90 degrees about a pitch axis defined as parallel to an axis that runs through said first camera and said second camera and orthogonal to said roll axis.

39. (currently amended) A method for calculating distances to objects within three-dimensional space in an environment comprising horizontal and vertical lines using an angled axis machine vision system comprising:

attaching a first camera and a second camera to a camera mount wherein said first camera and said second camera comprise collinear horizontal center lines;

rotating said camera mount in a first axial angle to a fixed rotation between 0 and 90 degrees about a roll axis defined as parallel to ground;

obtaining a first picture from said first camera;

obtaining a second picture from said second camera; and,

calculating a distance using said first picture obtained from said first camera and said second picture obtained from said second camera to a feature found along an epipolar line parallel to said collinear horizontal center lines wherein said feature exists on a horizontal or vertical line in an environment with respect to said ground, yet wherein said line appears at said first axial angle with respect to said epipolar line when said camera mount is at said rotation of said first axial angle and wherein said calculating comprises calculating distance to said feature using said epipolar line intersection with said horizontal or vertical line at said first axial angle to increase accuracy and useable detail and minimize errors in said distance calculation..

40. (previously presented) The method of claim 39 wherein said first axial angle is substantially 45 degrees.

41. (previously presented) The method of claim 39 wherein said first axial angle is substantially 37 degrees.

42. (previously presented) The method of claim 39 wherein said first axial angle is substantially 29 degrees.

43. (previously presented) The method of claim 39 further comprising:

rotating said camera mount in a second axial angle between 0 and 90 degrees about a pitch axis defined as parallel to an axis that runs through said first camera and said second camera and orthogonal to said roll axis.

44. (currently amended) A system for calculating distances to objects within three-dimensional space in an environment comprising horizontal and vertical lines using an angled axis machine vision system comprising:

means for attaching a first camera and a second camera to a camera mount wherein said first camera and said second camera comprise collinear horizontal center lines;

means for rotating said camera mount in a first axial angle to a fixed rotation between 0 and 90 degrees about a roll axis defined as parallel to ground;

means for obtaining a first picture from said first camera;

means for obtaining a second picture from said second camera; and,

means for calculating a distance using said first picture obtained from said first camera and said second picture obtained from said second camera to a feature found along an epipolar line parallel to said collinear horizontal center lines wherein said feature exists on a horizontal or vertical line in an environment with respect to said ground, yet wherein said line appears at said first axial angle with respect to said epipolar line when said camera mount is at said rotation of said first axial angle and wherein said means for calculating comprises software configured to calculate a distance to said feature using said epipolar line intersection with

said horizontal or vertical line at said first axial angle to increase accuracy and useable detail and minimize errors in said distance calculation.

45. (previously presented) The system of claim 44 wherein said first axial angle is substantially 45 degrees.

46. (previously presented) The system of claim 44 wherein said first axial angle is substantially 37 degrees.

47. (previously presented) The system of claim 44 wherein said first axial angle is substantially 29 degrees.

48. (previously presented) The system of claim 44 further comprising:
means for rotating said camera mount in a second axial angle between 0 and 90 degrees about a pitch axis defined as parallel to an axis that runs through said first camera and said second camera and orthogonal to said roll axis.